50

System A

400

80

PMT

80a

72   70

62

focusing optics

98   ~~300~~

74

56   58

78

52

Laser

PBS

54

60

84   86

Quad Cell

206

82   N2 (Removable)

76a

90   94   Wafer

76

92

96

FIG. 1

FIG._2

LASER

122

BEAM EXPANDER

124

ACOUSTO-OPTIC DEFLECTOR

126

128

130

POST-AOD & POLARIZATION SELECTION OPTICS

132

134

136

SCAN LENS

138

140

SCAN LINE

150

110

120

111b

TO PROCESSOR 400

90

APS OPTICS

APS ELECTRONICS

192

TO PZT AMPLIFIER & Z STAGE

152
154
154a
156a
156

TIMING ELECTRONICS

184

156b

WAFER

158

POWER AMPLIFIER

182

CHIRP GENERATOR

180

x

y

200

Figure 1. Optical Pattern Filtering defect detection.

Figure 1. Optical Pattern Filtering defect detection.

FIG. 3

FIG. 4

Figure 2: Simulated distribution of defects after a scan. Size indicated in microns
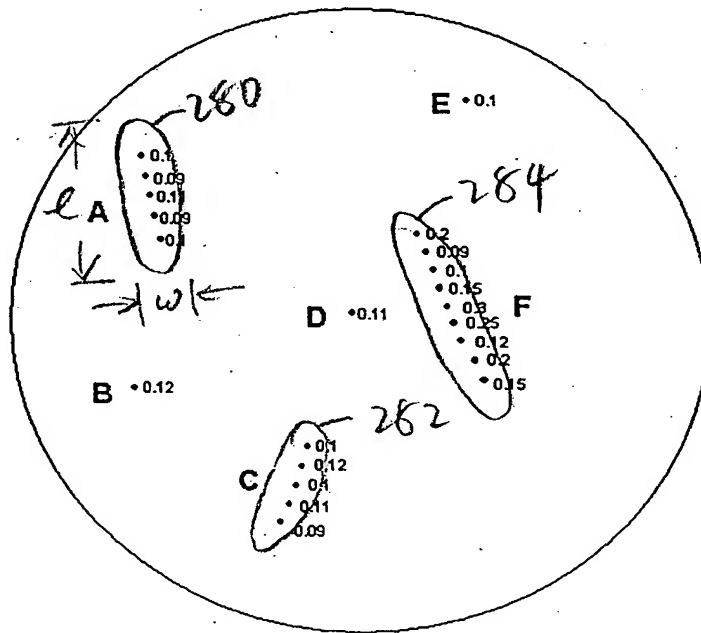

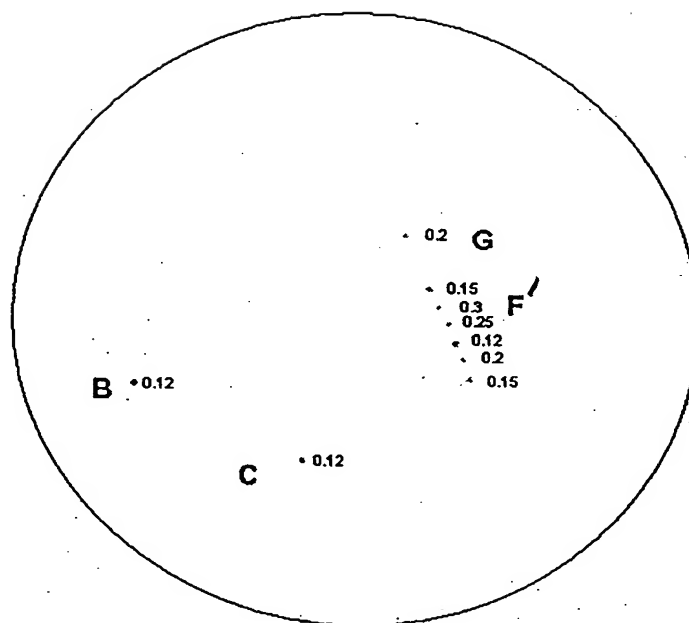**Figure 3: Initial clustering in microscratch algorithm**

FIG. 5

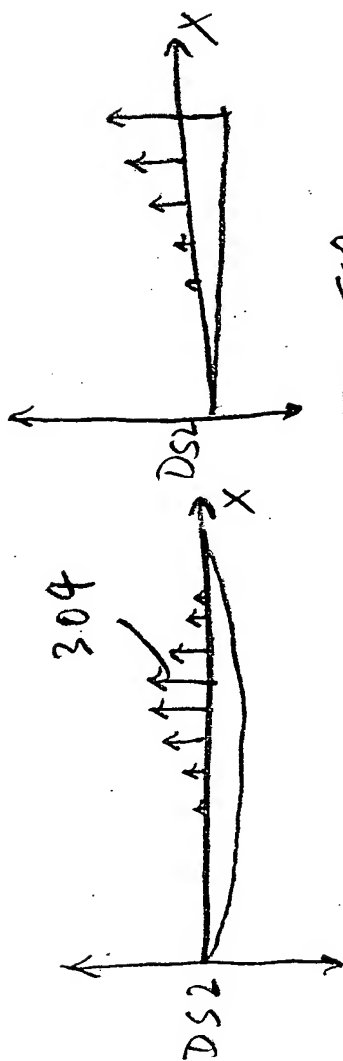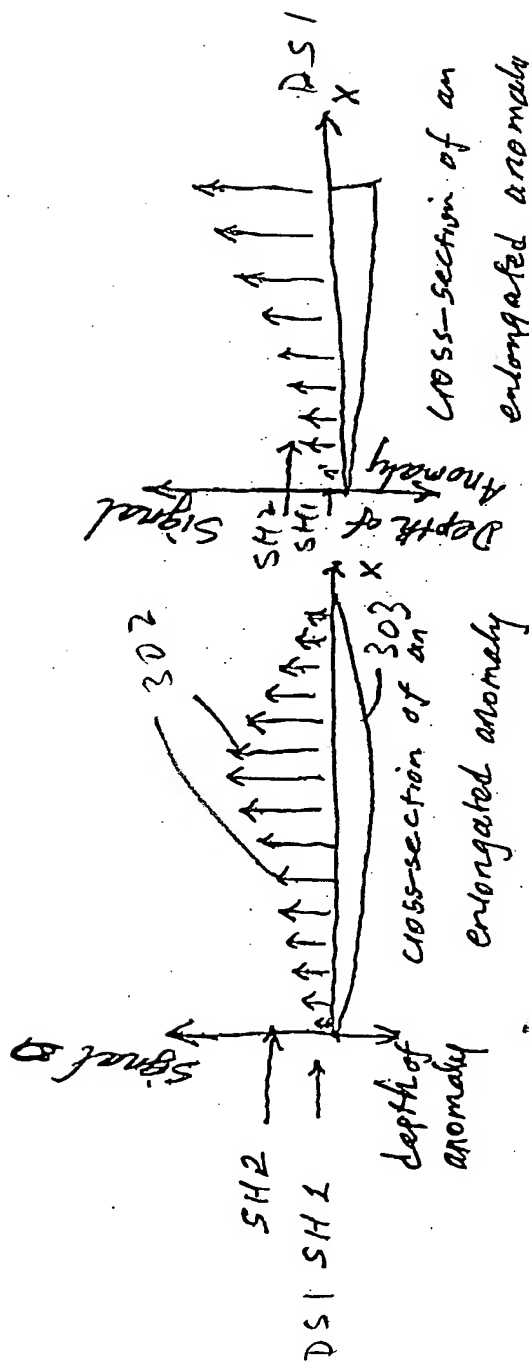**Figure 4: Final output of the microscratch algorithm.**

FIG. 6

Fig. 9

Cross-section of an non-enlongated anomaly.

Fig 7B

DS1
x
SH2
SH1
Depth of Anomaly
Signal
Cross-section of an enlongated anomaly

Fig 8B
DS2
x

Fig. 8A
304
DS2
x

302
303
Cross-section of an enlongated anomaly
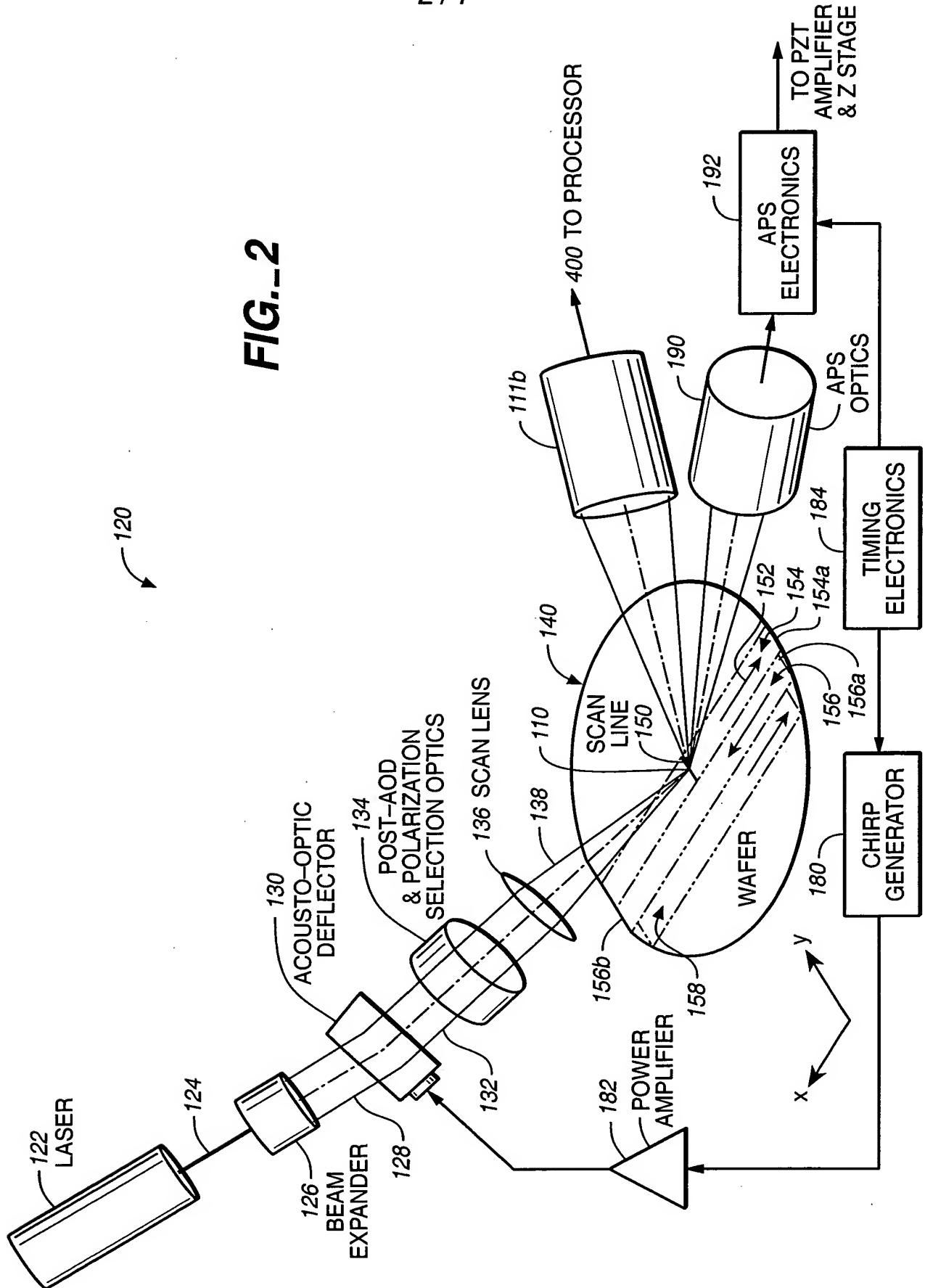Fig. 7A
SH2
DS1 SH1
depth of anomaly
Signal
x

6.
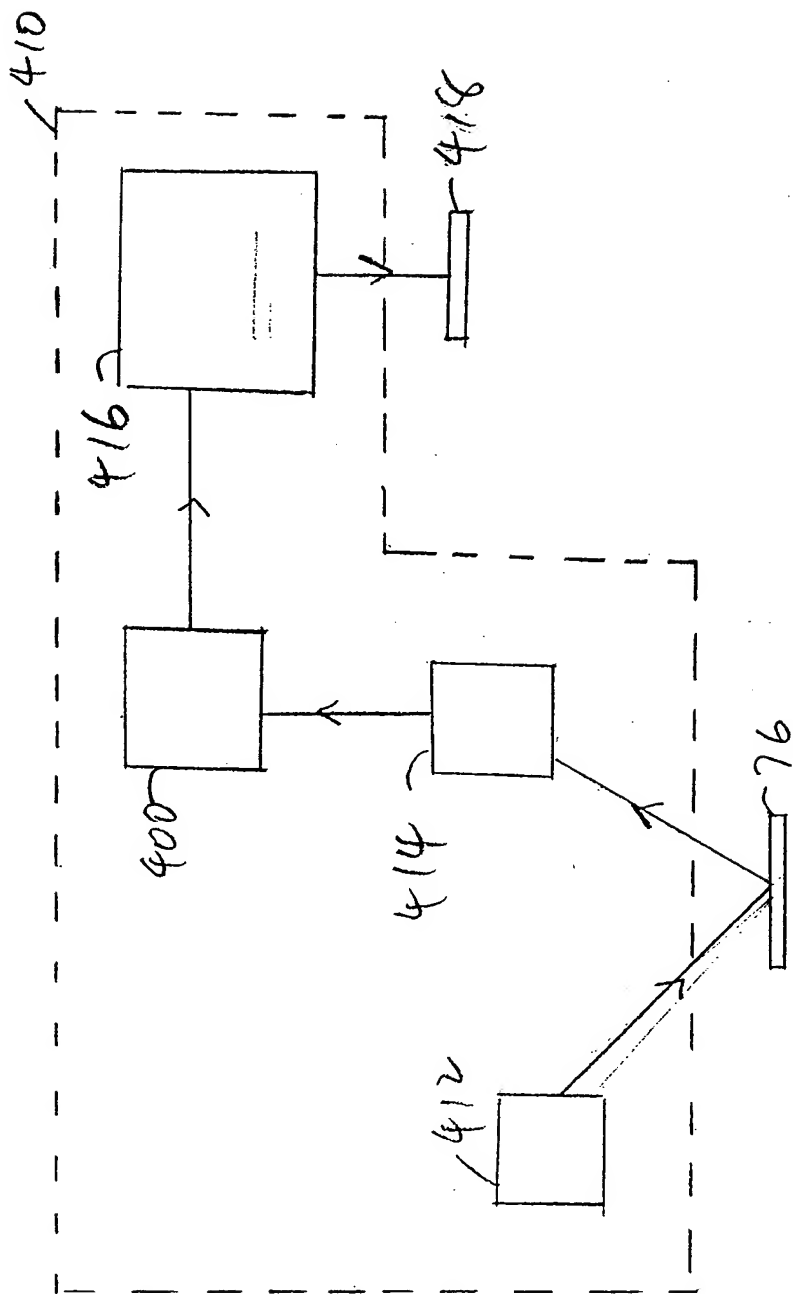
FIG.10
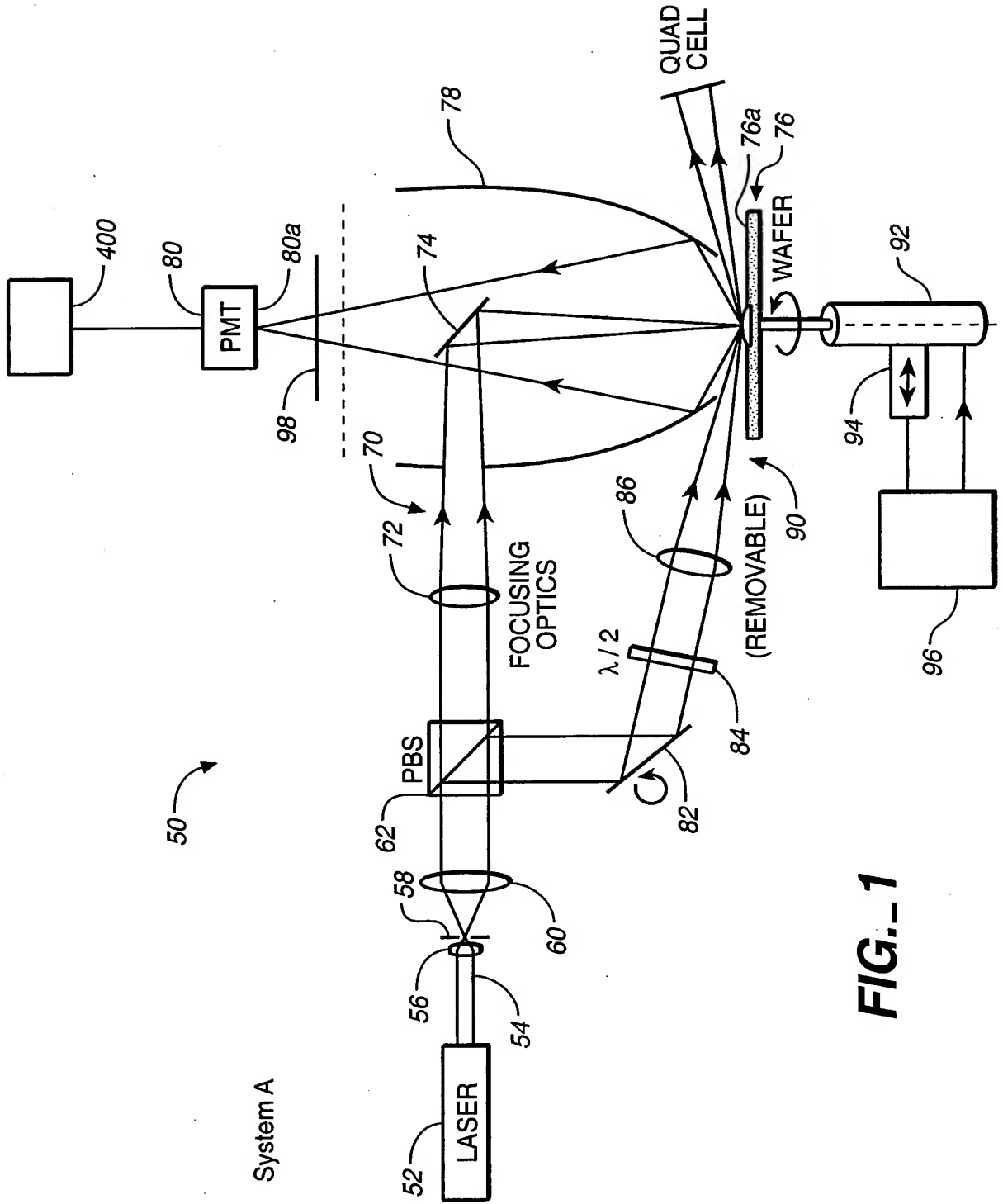
FIG._1
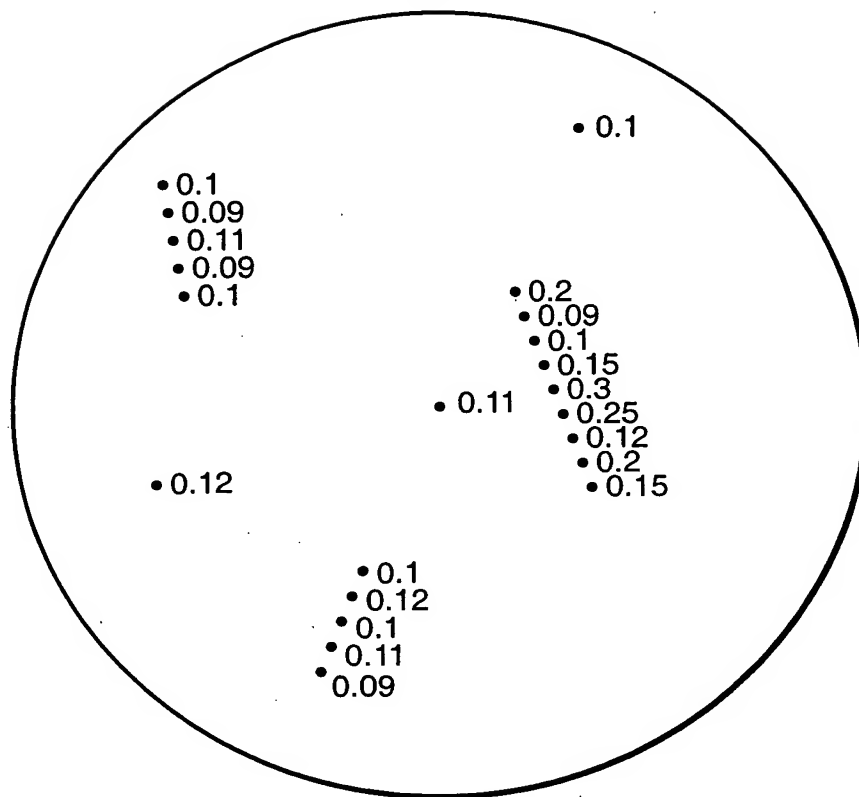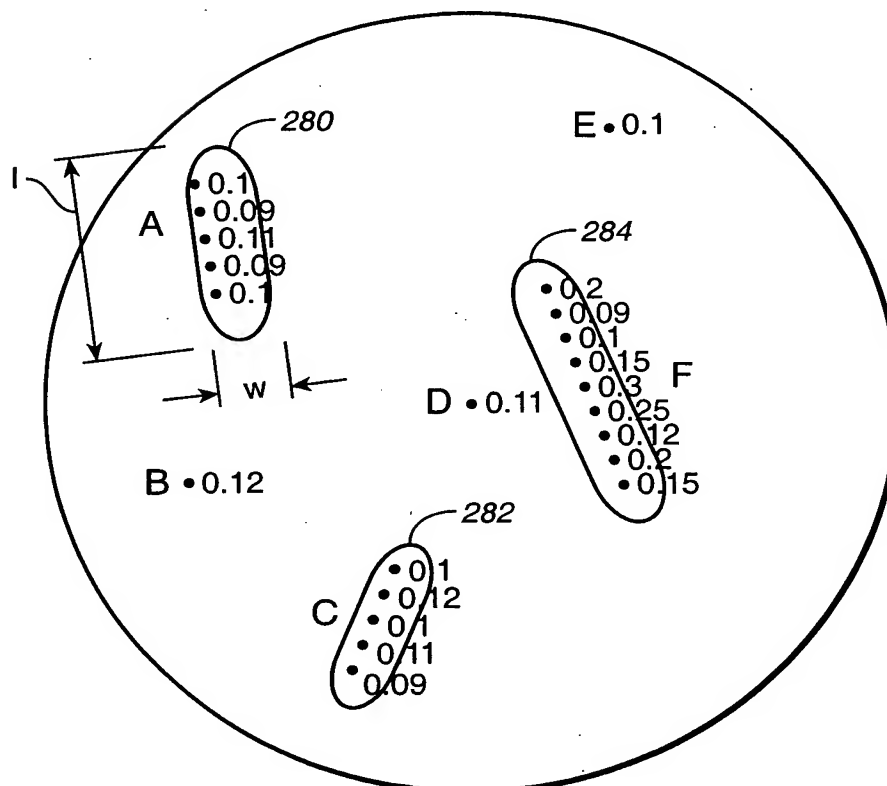
FIG._2
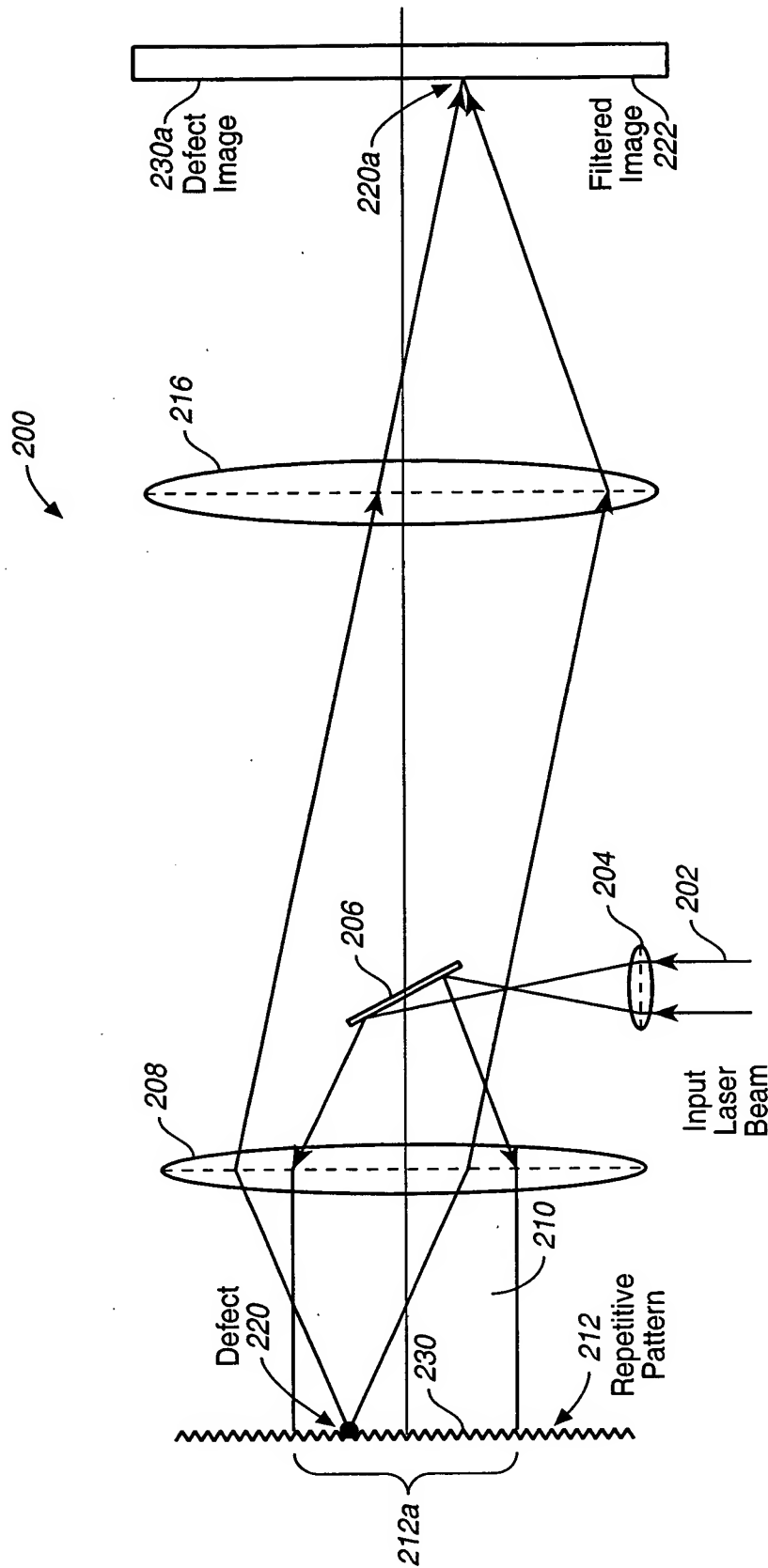
FIG._3

Optical Pattern Filtering Defect Detection
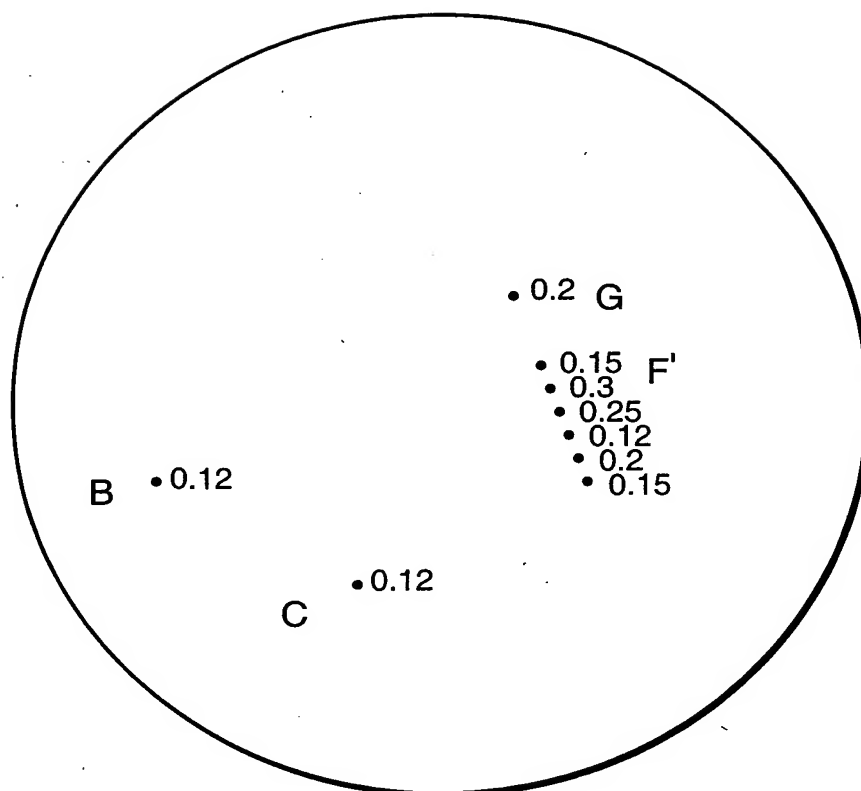
FIG._4 Simulated Distribution of Defects
After a Scan. Size Indicated in Microns

FIG._5 Initial Clustering in Microscratch Algorithm
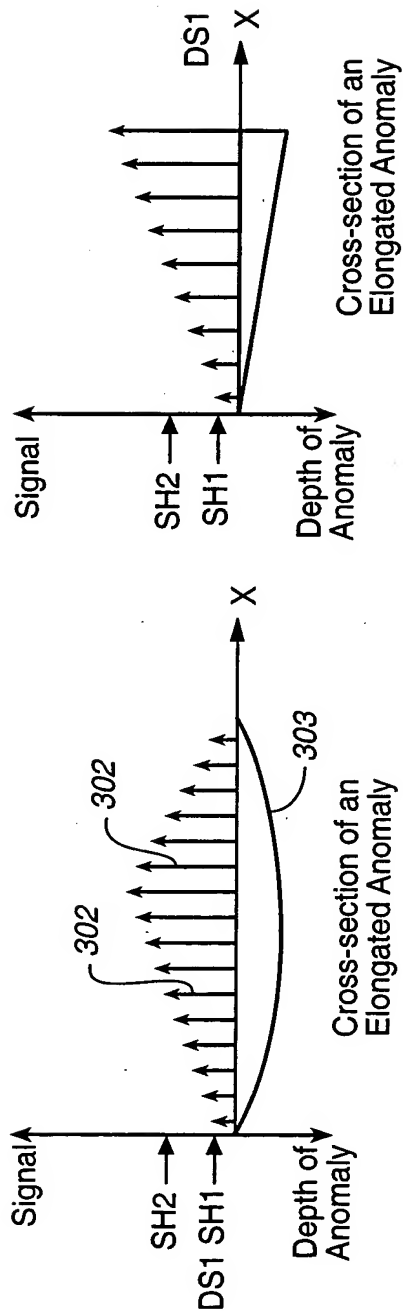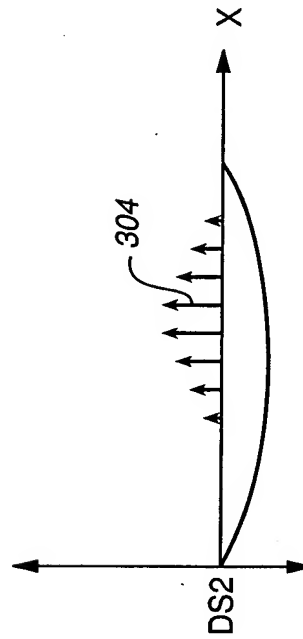
Final Output of the Microscratch Algorithm

FIG._6

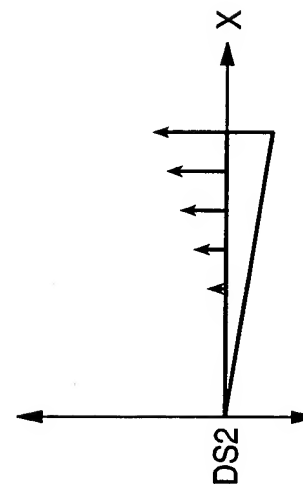Cross-section of a Non-elongated Anomaly

FIG._9

DS1

X

SH2
SH1

Signal

Depth of Anomaly

Cross-section of an Elongated Anomaly

FIG._7B

X

DS2

FIG._8B

X

302
302
303

Signal

SH2
DS1 SH1

Depth of Anomaly

Cross-section of an Elongated Anomaly

FIG._7A

X

304

DS2

FIG._8A

FIG._10